pgoswami@rogers.com

From: materials-welding@googlegroups.com on behalf of pgoswami <pgoswami@quickclic.net>
Sent: May 1, 2011 8:40 PM
To: materials-welding@googlegroups.com
Subject: [MW:10910] [MW:10900:- Duplex Claded Eqipt PWHT
Attachments: Effect of microstructure on impact toughness of duplex and superduplex stainless steels.pdf

Mr. Hegde,

As per UHA-32;-For the austenitic-ferritic wrought or cast duplex stainless steels, post weld heat treatment is neither required nor prohibited, but any heat treatment applied shall be performed through exposure of the alloy between 1000-1100 deg C and followed by liquid quenching or rapid cooling by other means. Ideally the most appropriate post weld heat treatment for Duplex S.S is solution anneal.

The same analogy may not work (difficult to practice) for a duplex clad carbon or low alloy steel plates.PWHT at the solution anneal temperature is not feasible for fabricated vessel/equipments. As pointed out by Mr. Kulkarni and Mr. Herman Pieper PWHT in the range of 610 deg C could severely embrittle the duplex, through formation intermetallic phases such as sigma and Chi phases.The chances would be more pronounced for super duplex 2507 than 22Cr duplex e.g UNS 31803.

One feasible option could be PWHT at lower temperature for extended period of time(UCS-66). *I would feel a PWHT @ 450deg C would be sensible*. However meeting all design code (ASME or others) requirements and additionally corrosion test e.g IGC,Pitting corrosion,etc as per G-48 needs to be established during PQR qualifications. It *may worthwhile to run procedure qualification test with matching duplex S.S consumables and superior austenitic consumables such as E-NiCrMo-3(Incol 625) to see the relative merits and demerits.*

All may not be that deadly with lean and medium alloyed duplex S.S e.g S 31803. The attached article provides a good insight on various detrimental phases and their formation mechanisms at various temperatures.

Thanks.

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From: materials-welding@googlegroups.com [mailto:materials-welding@googlegroups.com] **On Behalf Of** arijoy roy
Sent: Saturday, April 30, 2011 9:18 PM
To: materials-welding@googlegroups.com
Subject: Re: [MW:10900] Duplex Claded Eqipt PWHT

Dear Mr. Kulkarni
The Cr overlay is usually for a dual purpose for anticorrosion and wear resistance.
What is the performance of the incolloy with respect to wear resistance
With Regards
Arijoy roy

--- On **Sat, 30/4/11, manish kulkarni <*kul_manish@yahoo.co.in*>** wrote:

From: manish kulkarni <kul_manish@yahoo.co.in>
Subject: Re: [MW:10889] Duplex Cladded Eqipt PWHT
To: materials-welding@googlegroups.com
Date: Saturday, 30 April, 2011, 10:16 AM

Dear Mr.Hegde,

You have not specified composition of overlay -22 Cr or 25 Cr.
The DSS overlay and subsequent PWHt at 600 Deg.C is not advisable primarily for Alfa Prima microstructure which is likely to form in this temp. range. Corrosion tests (G 48) and Hardness test may reveal this.However it is difficult to take out sample for G 48 test with 3 mm overlay on CS.

Probable solutions-

1) Incolloy 625 overlay instead of DSS.
2) Carryout PWHT after completion of overlay after first pass and overlaying other passes after PWHT.
3) Carryout SSC/SCC test with Simulation heta treatment for the process conditions as stated in NACE.

Regards,

Manish Kulkarni

--- On **Fri, 29/4/11, Prakash Hegde *<pb.hegde@yahoo.com>*** wrote:

From: Prakash Hegde <pb.hegde@yahoo.com>
Subject: [MW:10879] Duplex Cladded Eqipt PWHT
To: materials-welding@googlegroups.com
Date: Friday, 29 April, 2011, 10:01 AM

Dear Friends

I have a query about The Duplex cladded E quipment having base material SA 516 Gr70 of 50mm thk and clad of Duplex (3mm)
The eqipment require to undergo PWHT at 600C The Joint is clad restored by Duplex weld

i) Does the PWHT at 600C will affect the Corrosion properties of Duplex weld (Corrosion test like IGC,Pitting corrosin,etc as per GS8)

ii) If yes do we require to carry out PWHt at lower Temp.

Regards
Hegde P.B.
08805593046

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